

pathological rather than a local condition, the air-passages being the ordinary vehicle of its transmission. He found local treatment of little or no avail, unless the overcrowding could be diminished and ventilation secured, which, under the circumstances, was rarely possible. Of the great number of local applications tried, the *perchloride of iron* succeeded best. In 30 cases, where all other treatment seemed unavailing, amputation was performed, 14 of the patients dying, and 16 recovering. In none of the 30 cases was there relapse of the gangrene, nor did one of them die of the immediate effects of the operation.

Purulent Infection.—This prevailed in the Constantinople hospitals from the period of the battle of the Alma to the end of the campaign, and proved the principal cause of death after wounds and operations. It especially manifested itself in the case of osseous lesions, however slight these might be. Fractures of the shafts of the long bones were always rapidly followed by pyæmia, rendering any subsequent operation useless and mischievous, inasmuch as this but accelerated the progress of the general affection, as of 490 amputations performed in continuity, 192 terminated fatally, while but 32 of 49 disarticulations exhibited a like issue. The author has found no description of treatment useful, and recommends only that symptoms should be combated as they manifest themselves.—*Brit. and For. Med.-Chir. Rev.*, April, 1860, from *Recueil de Mémoires de Médecine et de Chirurgie Militaires*, tom. xxii.

OPHTHALMOLOGY.

29. *Synthesis of Cataract.*—Dr. S. Weir Mitchell, of this city, in performing some experiments on exosmosis, made the remarkable observation that, when syrup was injected into the subcuticular sacs of frogs, a curious form of cataract was produced. (See his paper in the number of this journal for January last, page 106 *et seq.*)

Dr. RICHARDSON, of London, after reading this paper, performed a number of experiments which confirm Dr. Mitchell's observations, and he brought before the Medical Society of London (March 26, 1860) animals presenting cataract in various stages.

The leading facts adduced by Dr. Richardson may be thus summed up:—

"1. When from one and a half to two drachms of syrup are injected under the skin of a frog, the body of the animal first becomes enlarged from exosmosis; and afterwards, in from twelve to thirty-six hours (the enlargement having meanwhile disappeared), cataract, usually in both eyes, is the result. This was confirmed by twenty experiments, and is identical with the result previously obtained by Dr. Mitchell. 2. If the frog, after injection, is freely surrounded with water, it recovers without cataract, a fact observed also by Dr. Mitchell. 3. If, immediately after the lens becomes opaque, the animal is surrounded by water, the cataract may be made to disappear. This was confirmed by three experiments. 4. The cataract, being fully developed, remains permanent; the animal apparently recovering its general health, but being entirely blind. 5. When the cataractous lens is removed from the animal, the opacity may be seen to have commenced either at the posterior part of the lens, spreading circumferentially, or at the anterior part, spreading backwards. The opacity is diffused, but it does not reach the centre of the lens. Similar observations had been made by Dr. Mitchell, except that he traced the opacity from the posterior surface in all cases. The capsule of the lens seems clear. (*Mitchell.*) A similar opacity of the lens may be produced in the eye of a sheep, immediately after death, by the injection of syrup into the anterior chamber. In these conclusions the results of both authors were in the main the same; and, having described them, Dr. Richardson referred to observations of his own. 6. All varieties of sugar—cane, grape, and milk—produce the same result; and frogs were presented, with cataract induced by the injection of syrups of each of these sugars. 7. The form of cataract did not vary in any case. 8. After several experiments, it was found that a syrup

of cane or grape-sugar, of specific gravity 1150, was the most practical; and of milk-sugar, that of specific gravity 1120. 9. Injection of gum-water does not produce cataract. In one case, after the injection of albumen, it was believed that some opacity was produced; but a second experiment did not confirm this result. 10. Sugar-cataract is producible in other animals. In a fresh-water fish, placed in water brought to the specific gravity of 1070 by cane-sugar, perfect cataract was produced on one side, the other side seeming to escape altogether. A second fish, placed in the same solution, lived in it for several hours, but showed no cataract. In guinea-pigs, rabbits, and dogs attempts had been made to produce the sugar-cataract by injecting syrup into the peritoneum. Great difficulties, however, were experienced in these experiments; for it was found that if an overdose of syrup was injected, the animal died rapidly, as from hemorrhage, through rapid transudation of water from the blood into the peritoneal sac. If, again, small quantities were introduced, the sugar was rapidly eliminated by the urine; in which it was found present, in one case, within an hour after the injection of grape-sugar syrup. But, by throwing an ounce of syrup of grape-sugar into the peritoneum of a rabbit, and repeating it after ten hours, distinct opacity of both lenses was produced. The animal, however, died after a third injection, the opacity increasing till death. The rabbit was presented to the society. As to the cause of the cataractous condition, Dr. Richardson considered it purely osmotic; that is to say, it was due to an excessive transudation of water from the lens to the surrounding fluids, upon which the component parts of the lens were disarranged, and opacity was the result. This form of cataract, while it presented the appearances of common cataract, connected itself intimately with the facts which had been made out in the etiology of the disease, as to the coexistence of diabetes and cataract. Dr. Mitchell, at the conclusion of his paper, had noticed the same circumstance; and Dr. Richardson thought its importance could not be overestimated. The coexistence of diabetes and cataract had been pointed out by Mr. France, by Cohen, Lohmeyer, Gunzler, Mackenzie, and Duncan; but especially by Von Gräfe, who had stated that, after examining a large number of diabetic patients in various hospitals, he had found about one-fourth of them affected with cataract. In Dr. Richardson's opinion, however, it was not necessary that the general manifestations of diabetes should always be presented for diagnosis when sugar existed in the secretions; and it might be that there was such a condition as a temporary diabetic state, during which cataract might be developed. Any way, the synthesis of cataract by one process was demonstrated, and the first rational step towards the pathology of the disease had been made. As a point bearing on the treatment of cataract, Dr. Richardson said that inasmuch as temporary opacity produced by exposure of the lens to syrup was removable by an after exposure to water (*i. e.* by changing the position of the medium surrounding the lens), it was worthy of consideration whether an operation for letting out the aqueous humour by a small opening, and refilling the anterior and posterior chambers with distilled water, might not lead to removal of the cataractous condition in the *earliest* stages. The author concluded with some complimentary remarks on the important labours of his transatlantic brother, Dr. Mitchell."—*British Medical Journal*, March 31, 1860.

At a subsequent meeting of the same society (16th of April), Dr. Richardson made a second communication, in which he described a number of experiments made by him with various substances.

"Glycerin.—Two experiments were performed with this. In the first, one drachm of glycerin being injected into the dorsal sac of a frog, there was produced, in three hours, posterior opacity of the lens. In a second experiment, a drachm and a half was injected, which caused death in six hours, without cataract.

"Alcohol.—A drachm of absolute alcohol, injected into the dorsal sac of a frog, caused death in two hours, with extraordinary shrinking of the body, and distinct double cataract posteriorly. Half a drachm of absolute alcohol, injected into the dorsal sac of another frog, caused death in six hours, with distinct cataract, but, singularly enough, on one side only. The cataractous condition produced by glycerin and alcohol resembled that produced by sugars.

Chloride of Sodium.—By introducing into the dorsal sac of a frog from two to three drachms of a solution of chloride of sodium, of specific gravity 1150, the animal was rendered tetanic; and in twenty minutes the limbs were drawn immovably towards the body, but jactitation of the muscles continued for an hour, when the animal died. Distinct cataract was produced in both lenses before death. In another experiment, a drachm and a half of the solution was used; the same symptoms followed, but more slowly. Distinct cataract resulted. In a third case, one drachm of the same solution was injected; death occurred in two hours, marked cataract having previously appeared. In a fourth case, half a drachm was used; death occurred during the third hour, with the same signs of cataract. In a fifth case, one drachm of solution of chloride of sodium, of specific gravity 1050, was thrown in. In three hours there was distinct double cataract; the animal was immensely shrunken, and the skin was dry, almost like parchment. Placed in water, the animal recovered; and, the water being frequently changed, the cataract entirely disappeared in fifty-three hours. Cataract was reproduced in this animal, again removed, and again reproduced. Dr. Richardson presented the animal with the cataract. The character of the cataract produced by chloride of sodium seems to differ materially from that produced by sugar. The lens is much firmer, and the opacity extends through the whole structure. The lens resembles one that has been boiled.

Iodide of Potassium.—From the chemical analogy between chloride of sodium and iodide of potassium, Dr. Richardson had used the latter salt in the same way; the general symptoms produced were very similar, except that the cataractous condition did not result, at least so far as his experiments had gone.

Acid Urate of Soda.—From the fact of the insolubility of the urates, Dr. Richardson said that he did not expect that a cataract could be produced by the introduction of this substance into the blood. He did not conceive, that is to say, that any osmosis could be established by that salt; but an accidental experiment had led him to try what could be done in this direction. On March 2d of the present year he had commenced to administer to a well-fattened and healthy bitch the acid urate of soda, in doses of two drachms daily, with her food. His object was, to ascertain whether any affection of the joints would be produced. At this time she had taken nearly a pound of the urate, with no effect whatever on the joints; but, within the last three weeks, with distinct and rapidly increasing indications of double cataract. The animal was exhibited to the society. Acting on this suggestion, the author had tried to produce the same effect on frogs, by charging them with the urate of soda, but without any similar result. The occurrence of cataract in the larger animal might therefore be a coincidence; but Dr. Richardson was inclined to think that it was an indirect effect of the urate; that is to say, he believed that the urate was decomposed in the digestive process, and changed probably into a lactate or other soluble salt of soda; which, being conveyed into the blood, produced the cataractous condition. In proof of this he showed that a solution of lactate of soda, of specific gravity 1060, produced cataract in frogs when injected. Dr. Richardson drew the following conclusions from the experiments: 1. In addition to the sugar-cataract, there is producible what may be called a saline cataract. 2. The appearances of the cataracts as produced by different solutions vary; thus the cataract produced by chloride of sodium differs from that produced by grape-sugar. 3. The same cataractous appearance can be produced in a clear lens, after removal from the body, by immersion in solution of sugar, salines, etc. 4. As the cataractous appearance is modified by the density of the producing body, and is removable by reversing the conditions which have led to it, and as it is producible in a clear lens removed from a body, it is a demonstration that the cataract induced in the different animals is a purely physical—that is to say, osmotic—change.”—*Ibid.*, April 21, 1860.

30. *Dislocation of the Lens, the Effect of Vomiting eight days after Kerato-nixis.*—The following case, related by Mr. WHITE COOPER (*Ophthalmic Hospital Reports*, No. X.), is valuable as illustrating the importance of extracting the lens when it has been displaced and hence has become a source of irritation:—
“On Tuesday, October 18, 1852, I operated with the needle on a congenital

cataract in the left eye of Miss S., aged 20. The instrument was used lightly, and the capsule moderately lacerated at its centre; the position of the lens was unaltered, and so little irritation followed, that at the expiration of a week the eye appeared to have recovered.

"On the eighth day, however, she was attacked with obstruction of the bowels, attended with so much irritability of the stomach that for forty-eight hours everything was rejected by vomiting. It was not until after the administration of ten grains of calomel and repeated doses of purgative medicine that a passage through the bowels was obtained; then an enormous quantity of offensive fecal matter came away.

"On Thursday, the 27th, I was sent for, and found the eye in the following condition: The lens had been dislocated, and was pressing the iris forward, obliterating the anterior chamber and partly filling the pupil, which was so widely dilated that the iris was reduced to a mere circular strip. The conjunctiva and sclerotica were acutely inflamed, and there was intense neuralgia of the branches of the fifth pair on that side of the head and face.

"I at once proposed to place the patient under chloroform, and extract the lens; but this proposition did not meet the approval of the patient or her relatives; calomel and opium were therefore administered, leeches applied, and general antiphlogistic treatment adopted. Nevertheless, the inflammation became so acute, and the patient's sufferings so intense, that on the following Monday the required permission for the operation was granted. The patient having been chloroformed by Mr. Potter, I carefully made an incision with a broad iris knife through the cornea near the outer margin, and carried the point into the lens, which was broken up by a few movements of the instrument; the knife was then somewhat turned on its axis, whereby the edges of the wound were separated, and the bulk of the lens was instantly expelled from the eye; the remaining fragments were easily removed with a scoop. The lids were then closed, secured with plaster, and cold water dressings applied.

"From this time the cessation of pain was complete; the patient, who had been five nights deprived of rest, slept profoundly more than ten hours; the inflammation, which had been intense, speedily subsided under simple treatment, and at the expiration of a week scarcely a trace remained. The iris, however, continued paralyzed, and the pupils as widely dilated as when the lens was removed; this state of things yet continues, and, according to my experience, many months may elapse before the activity of the iris is restored. With this exception, the eye is now (November 21) well, and the vision improving daily. With a three-inch lens large type can be read with facility.

"This case forcibly illustrates the advantage arising from extraction of the crystalline lens when displaced, and causing irritation. Instead of the existing inflammation being aggravated by the wound inflicted on the eye, and the use of the scoop, there was from that time a diminution of all the symptoms; and though it would have been better to have performed the operation when first suggested, as the iris would thereby have been relieved from the injurious pressure which for the time paralyzed it, the retina has fortunately received no injury, and a condition of mydriasis is the worst result which has followed the unfortunate displacement of the lens."

MIDWIFERY.

31. *On the Use of the Forceps in Face Presentations.*—Dr. VON HELLY, teacher of obstetrics in the University of Prague, presents a valuable analysis of the mechanism and treatment of face presentations. Starting from the familiar fact, that these are more tedious than labours in which the vertex presents, he says the reason lies in the circumference with which the head enters the pelvis, and in the unusual relations which the peculiar position of the fœtus induces. The head of a fœtus born by the vertex, is lengthened in the longest or diagonal